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The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

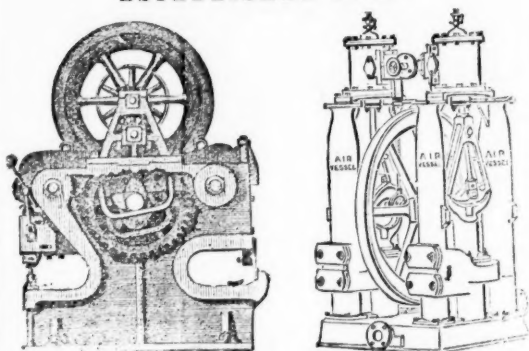
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No. 2107.—VOL. XLVI.

LONDON, SATURDAY, JANUARY 8, 1876.

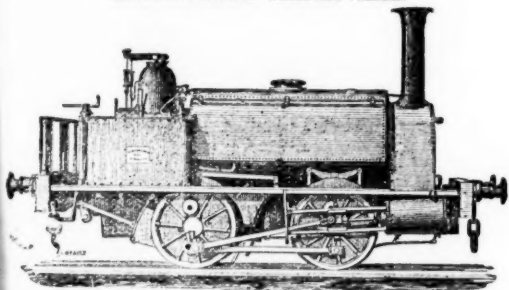
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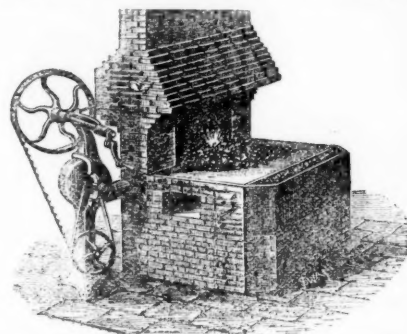
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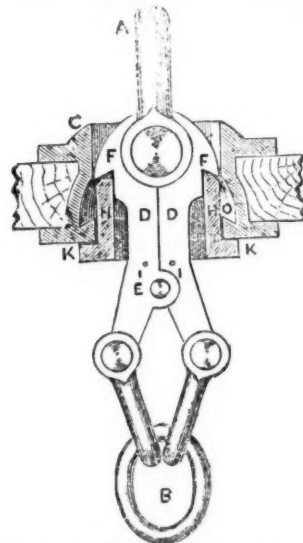
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FOR COLLIERIES AND BLAST-FURNACE HOISTS.



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Walker's Hook, at Tockett's sinking, has saved six men's lives
On the 6th instant, the kibble was overwound, and but for the hook
would have fallen down the pit, where six men were working, 120 ft.
below, all of whom would probably have been killed. Thanks, how-
ever, to Mr. Walker's invention, the rope alone passed harmlessly
over, the kibble remained suspended, and in half-an-hour everything
was working as if nothing had occurred.—From the Northern Echo
August 20, 1874.

Full particulars may be obtained from the Manufacturers,—

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The SIMPLEST, CHEAPEST, and BEST Machine in the World for
SINKING, MINING, and QUARRYING,



It has been selected by the Admiralty for their works, and is extensively used at the principal Mines, Collieries, and Quarries of Great Britain, and the Continent of Europe.

"To this invention, which appears to possess several advantages over the machines previously exhibited at Falmouth, the Judges are unanimous in awarding a first-class silver medal" (the highest award).—*Report of the Judges at the Royal Cornwall Polytechnic Society's Exhibition, 1873.*

"The boring machine works splendidly."—W. TORRANCE: *Mid-Calder.*

"For simplicity, compactness, and performance of work, your drill excels all others."—JOHN MAIN: *Crossfield Ironworks.*

"Under the most difficult circumstances, they give every satisfaction."—G. GREY: *Montreal Iron Mines, Cumberland.*

"The simplest and best boring machine."—Capt. WASLEY's letter to the *Mining Journal*, Oct. 18, 1873.

"It gives every satisfaction."—W. E. WALKER: *Lord Leconfield's Iron Mines.*

"The rock-drill I bought of you seven months ago has given me entire satisfaction, and I am convinced that the 'Kainotomon' is the best rock-drill in the market."—P. MCGINNIS: *Strabane.*

"I am quite satisfied with the working of it. For sinking pits it is a first-rate invention; I can do as much boring with it myself as six men can do by hand."—S. JENKINS: *Abertillery.*



The advantages over other Rock-boring Machines claimed for the "Kainotomon" are—

- 1.—It is much shorter.
- 2.—It is much lighter, and more readily removed from place to place.
- 3.—It requires the turning of ONLY ONE, instead of a number, of set screws, to fix it in position at any angle.
- 4.—It may be fed 3 inches out of stroke, without stopping the working of the drill, an *invaluable advantage.*
- 5.—It is not liable to derangement.
- 6.—It has not one-third the number of parts in its construction.
- 7.—All stuffing-boxes and parts requiring adjustment are dispensed with.
- 8.—It is so simple in its construction that any ordinary labourer or miner can drive it, simply having to turn on the motive power and feed the drill.
- 9.—The rotation is compulsory, and regular.
- 10.—40 lbs. pressure only is required to work it.
- 11.—A saving of over 50 per cent. in iron and flexible piping.

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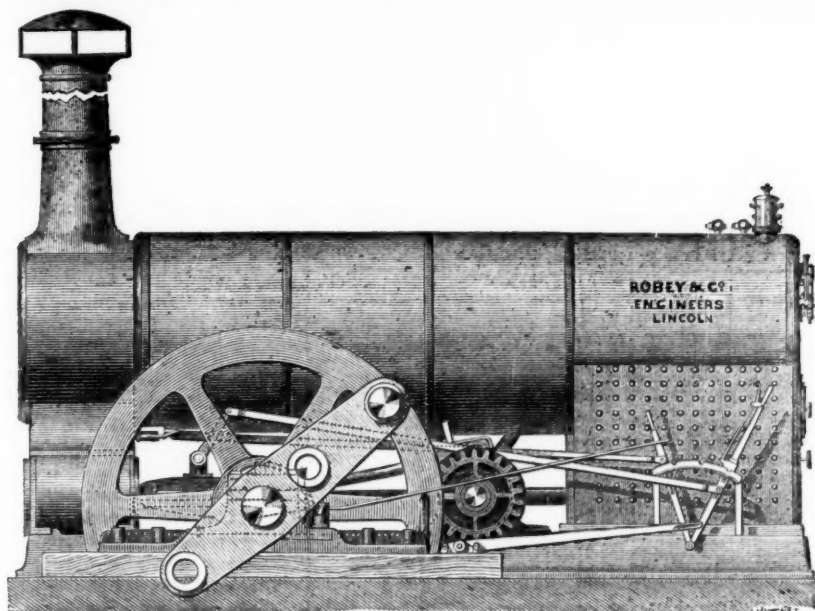
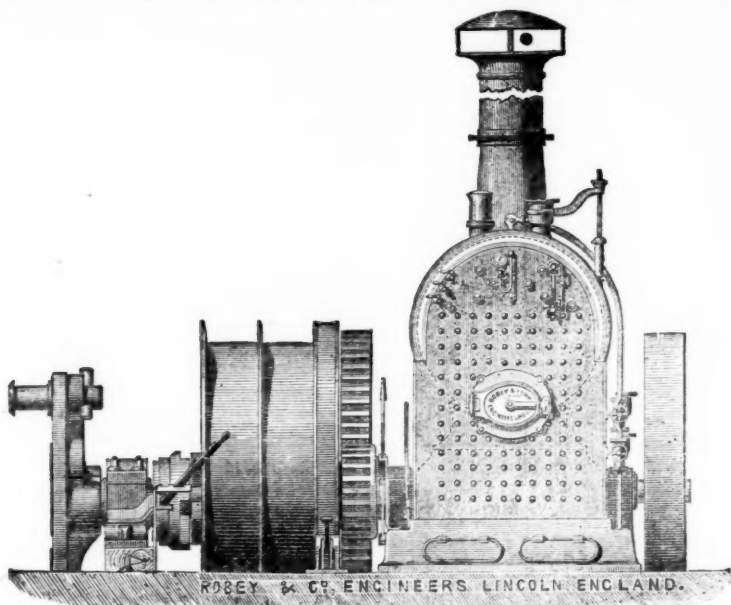
Patent No. 4136

Dated 16th December, 1873.

Patent No. 4150

Dated 17th December, 1873.

THE PATENT IMPROVED ROBEY MINING ENGINE.



Some of the advantages of the New Patent Engine are as follows:

- Small first cost.
- Saving of time and expense in erecting.
- Ease, safety, and economy in working.
- Great saving in fuel.

This New Patent Engine is free from all the objections that can be urged against using the old style of Semi-Portable Engine for permanent work, because it possesses the rigidity and durability of the Horizontal Engine, and at the same time retains the advantages of the Semi-Portable, in saving time and expense in fixing.

This New Engine is admirably adapted for driving Flour Mills, Saw Mills, Brick Machines, Pumps, Ore Crushers, Stone Breakers, and all descriptions of Fixed Machinery.

ENGINES UP TO 200 EFFECTIVE HORSE-POWER ALWAYS IN PROGRESS.

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ROBEY AND CO., Perseverance Ironworks, Lincoln, England.

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CHAPLIN'S PATENT PORTABLE STEAM ENGINES AND BOILERS.

PRIZE MEDAL, INTERNATIONAL EXHIBITION, 1862.



From the **STRENGTH, SIMPLICITY, and COMPACTNESS** of these ENGINES they are extensively USED for GENERAL PURPOSES, and also in situations where STEAM-ENGINES OF THE ORDINARY CONSTRUCTION CANNOT BE APPLIED.

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CRANSTON HILL ENGINE WORKS, GLASGOW.

ENGINES OF EACH CLASS KEPT IN STOCK for SALE or HIRE, and ALL OUR MANUFACTURES GUARANTEED as to EFFICIENCY, MATERIAL, and WORKMANSHIP.

Parties are cautioned against using or purchasing imitations or infringements of these patent manufactures.
AGENTS IN LONDON FOR THE SALE OF OUR MANUFACTURES: WIMSHURST AND CO.

Original Correspondence.

NOTES ON HARTON COLLIERIES.

SIR,—Under this title are comprised the three collieries—Harton, St. Hilda, and Boldon—carried on by Messrs. W. F. Blackett and partners. The royalties are very extensive, extending for 9 miles continuously in one direction, which includes 3 miles of coal field eastward under the sea, leased from the Crown. The other royalties are leased principally from the Ecclesiastical Commissioners, and from the Dean and Chapter of Durham. The collieries are under the management of Mr. George May.

BOLDON COLLIERY, with its two pits and plant, was described in the *Mining Journal* of Aug. 20, 1870. The working of coal was then being commenced in the Maudlin or Bensham seam. Since that time this seam has been largely and continuously worked, the workings being now of considerable extent. They are ventilated by means of large furnaces, the quantity of air in circulation amounting to 250,000 cubic feet per minute. This mine is not much troubled with gas, and as the coal is 5 ft. 9 in. in height, it is thus placed under favourable circumstances for safety in working.

HARTON COLLIERY is situated 1½ mile eastward from Boldon pits. One pit, 14 ft. in diameter, is sunk at Harton to the Bensham seam, the depth being 210 fms. Stone walling is inserted at the top of the pit for 15 fms., under that is cast-iron tubing for 65 fms. The Harton pit is the downcast for both Harton and Hilda Mines, the upcast being the Hilda pit, situated 1 2-3rd mile north-eastward from Harton pit, and in the town of South Shields. The sinking of Harton pit was commenced in 1841. The workings in the Bensham seam are now largely developed, the height of coal being 5 ft. 9 in. or more. The rise of the seam is about 3 in. in a yard eastward, the water level line being nearly north and south. The coal is worked entirely on the board and pillar system, pillars are left 50 by 20 yards, the bords 5 yards and walls 3 yards in width. When a panel of bords has been driven to the accustomed distance, the working of the pillars is then commenced backwards. It was formerly the custom to work with candles in the bords, and with safety-lamps in pillar working, now the whole is conducted with the use of safety-lamps. Though the production of gas is but moderate in this seam, the working is conducted on the safest principles, the danger of mixed lights being avoided. The use of gunpowder is allowed in the bords and walls only; under the circumstances of this mine this is quite consistent with safety when due care is used in examining each place before blasting.

In the Harton Mine 120 horses and ponies are employed. An engine plane is being made, which will be completed during this year, by which and other appliances the whole of these horses and train ponies will be dispensed with. The hauling engines are designed to be placed underground at one or more points, and to be driven by compressed air; the air compressors to be placed on the surface, and to be larger than any hitherto erected. At present not more than 1½ mile of engine plane is in progress, but eventually the plane will extend to the sea coast, a distance of 4 miles from the pit in a south-east direction. The winding-engine at Harton was erected in 1863 by T. Murray and Co.; it is on the lever principle, with 65-in. cylinder, 7 ft. stroke, and condensing; the drums, adapted to flat wire-rope, are 24½ ft. in diameter at the lift, increasing to 28 ft. diameter, with 16 coils or revolutions of the drum; the ropes are 6 by 6½ in., and consist of six strands. The break is the ordinary foot break, the strap acting on the lower half of the fly-wheel. The load in the pit is counter-balanced by two rivetted chains, to each of which a weight of 4 tons is attached; the chains wind and unwind over pulleys 5 ft. in diameter, fixed on the main shaft of the engine. The coal tubs are raised in cages of steel; each cage carries six tubs on three decks; the average weight carried in each tub is 8½ cwt. One minute is taken in raising each cage, and for changing tubs 30 seconds, together 1½ minute; at this rate 102 tons of coal would be raised in an hour. The engine-house is built of ashlar stone, side walls 4 ft. in thickness, middle wall 3 ft. 3 in.; the opening in the latter is supported by cast-iron columns and wood beams. Six Cornish boilers supply steam to this engine at 18 lbs. pressure, each being 30 ft. long and 6½ ft. diameter. The Harton pumping-engine, built in 1841 by Messrs. Hawks, Crawshaw, and Co., of Gateshead, is also condensing; its cylinder is 82 in. diameter, 8½ stroke, the main beam being of cast-iron; the stroke in the pit is 7½ ft. There are four lifts of pumps in the pit from the depth of 215 fms.; the lowest is a bucket lift, 12 in. diameter, 54 fms. in length; the three lifts above are forcing, 15 in. diameter, and 54 fms. each in length. The engine works day and night at the rate of 4½ strokes in a minute. Steam is supplied to this engine from four cylindrical boilers at 15 lbs. pressure, each being 30 ft. in length by 8 ft. The full pressure is only applied to the top of the piston, a very small pressure being required on the under side of it. A small crab engine is erected, and another for raising and lowering men, used in connection with the pump works in the shaft. A new range of workshops are erected in part at Harton, consisting of fitting and smiths' shops; new joiners' shops and saw-mills are intended to be made, which will give much greater facilities for repairing and making materials for the use of the colliery.

HILDA PIT is 142½ fms. in depth to the Bensham seam. This pit has been in operation for many years in raising coal from the upper seams, which are now probably exhausted. Previous to the year 1875 the mines of Harton and Hilda were ventilated by means of furnaces placed at the latter pit, the maximum quantity of air in circulation being then 80,000 cubic feet in a minute. In the beginning of 1875 the "Guibal" fan was set to work, its diameter being 50 feet, width 12 feet, the largest in diameter yet erected in this country. It is driven at the rate of 36½ revolutions in a minute, producing a circulation of over 175,000 cubic feet in a minute, with 26 water gauge, this would give a velocity at the circumference of a little more than a mile in a minute. The fan is designed, however, to be driven at 50 revolutions in a minute, whenever this is required, from the increase in the extent of underground workings. Both the fan and engines were made by Messrs. Black, Hawthorn, and Co., of Gateshead, in 1874. The engines are horizontal, 42 in. in diameter, 42 in. stroke, fitted with patent expansion valves, the engines are used alternately. The steam pressure is 50 lbs., and is cut off at one-third stroke; steam pressure will be raised to 75 lbs., when more expansion will be got from the steam. Three boilers, manufactured by D. Adamson, of Manchester, supply the engines with steam at 50 lbs. pressure, each 30 ft. by 7½ ft. in diameter, having two flues in each, 3 ft. diameter, with flanged seams, fire-box of steel, there are five cross tubes in each flue. Several more of these boilers will be erected to replace the old cylindrical ones, now nearly worn out, which supply steam to the winding and hauling engines. The feed water for the three new boilers is heated to 180° by one of Berryman's largest feed-water heaters, the water being heated without coming in contact with impurities mixed with the exhaust steam. The boilers, steam-pipes, and heater are covered by Keenan's non-conducting composition. The boilers are fed by a small engine, of the differential expansive kind, manufactured by Hawthorn, Davis, Campbell, and Davy. Chimney for boilers 153 ft. in height, 10 ft. diameter. There are now about 16 miles of underground airways in the Harton and Hilda Mines. As these have increased and extended further from the pits the necessity for an increase in the ventilating power has arisen; the fan for this reason having been substituted for the furnaces. At present it is working considerably within its capabilities. The hauling engine placed at the bottom of Hilda pit has two 22 in. horizontal cylinders, 3½ ft. stroke, spur wheels in ratio of 1 to 3; two 7 ft. drums, placed one before the other, and between the cranks. Steam at 25 lbs. pressure is taken down the pit by pipes. This engine hauls in and out by means of main and tail ropes; the length of plane at present in operation is 2134 yards, but extensions at different points are now ready to set to work, which will make the length of plane 2 miles more. The gradients in and out are easy, the highest does not exceed 1 in. in a yard. In the Hilda Mine 62 horses and ponies are employed, the latter includes putting ponies, and also train ponies, which bring a train of wagons to the engine plane stations. With the extensions above named the whole of the horses and train ponies will be dispensed with, and the work will be done by the engine.

The Harton Coal Company, as before observed, have leased from the Crown a large tract of coal field, lying under the sea, a portion of this has been leased by them to the Whitburn Coal Company, who are now sinking two pits through the magnesian limestone and the coal measures to work under sea coals. The Harton Company have the railway in progress to Bent House, near Westoe, which is the site fixed upon near the coast on which two pits are intended to be sunk, with the view of working the under sea coal they have leased to a distance of 3 miles from the shore. The magnesian limestone cropping out a little further south will not be encountered here. The depth to the Bensham seam will probably be near that at Hilda pit. As the seam near the coast, as far as it has been proved, lies nearly on a flat, it is presumed that the whole breadth of 3 miles will be available for coal working. Should a rise eastward take place there would be less probability of its being obtained.

On the subject of mechanical ventilation, it may be observed that within the last 10 years the "Guibal" Fan Ventilator has been largely adopted; 191 of these fans are now in use in Britain, varying in size from 10 ft. to 50 ft. in diameter. Of these—

62	are erected in Northumberland, Durham, and Cumberland.
43	" Yorkshire and Derbyshire.
12	" Cleveland.
24	" Wales and Monmouth.
14	" Wigan district.
28	" Staffordshire and Nottingham.
9	" Scotland.

Total... 191

This total, however, is but a small percentage of the whole of the collieries in Britain. In the case of the large Hilda fan the ventilating current has been more than doubled since it was set to work. It is worth while to point out this to others, as it constitutes the first requisite for good ventilation, and is effected with smaller consumption of fuel than with furnaces. Efforts are now being made by taking a comprehensive view of the working of coal mines—to secure an immunity from those explosions to which many mines in certain districts of late years have been subject.

It is peculiarly striking that in Lancashire and other districts the practice of shot firing has so often been found to be the cause of explosions there. When this has been established, the only course to be adopted—where safety-lamps are in use, and explosive gas is emitted—is to prohibit altogether the practice of it under such circumstances.

M. B. G.

DOUBLE-ACTION AIR-PUMP FOR COLLIERIES.

SIR,—I beg to send you my original drawing of the machine I alluded to in the *Journal* some few weeks back.—[The drawing represents an ordinary double-action pump of 50 in. cylinder and 7 ft. stroke. The air-pipes are 16 in. internal diameter, and the clacks open to the full area of the pipes.]—It is planned for a mine of small dimensions or for one just at its commencement. It must be fixed at the bottom of the sump-shaft in connection with the main rod, so that one engine works both it and the pumps. You will see by the drawing that my machine is cylindrical in shape, and discharges and receives air at every stroke. The main discharge pipe is carried to the surface, while the receiving pipe, by perpetual lengthening can be carried to the extreme end of the workings, both receiving and discharging pipes having the two smaller ones which are connected with the cylinder running into them, and hence the double-action. In larger mines I should recommend the machine being placed horizontally, connected with an engine, also horizontal, at the surface, whence the pipes might be conducted down the shaft, and from thence by an elbow joint along the workings. This would extract the gas, and cause a circulation of air at the rate of 100,000 cubic feet per minute.

The end of the main receiving pipe should be bell-mouthed, with wire gauze over it, and should be capable of being easily taken off and added on to a fresh length of pipe attached to the main. I would also recommend small connecting pipes being so placed along the length of the main pipe that in case of a fall or sudden accumulation of gas pipes might be fixed and taken to the very spot where pure air is wanted, and thus in three or four minutes pure air would be where the gas was, and all cause for danger would be removed; thus confidence would be given to the miners and pleasure to the employers. To show the necessity of some such arrangement ask all mining agents, sumpmen, and sinkers if ever they sunk a shaft 40 fms. without being hindered at times by foul air, and compelled to stop working until the state of the atmosphere permitted them doing so. At such times as these it is usual to place a small machine to press down air which mixes with that which is foul down below, and causes much danger to the health of the miner. This machine reversed would draw out the foul air, and atmospheric air would replace it, thus purifying the shaft.

Again, is it not a fact that shaft 400 yards deep, or other such workings, without communication with the outer air, if supplied with pumps which take off the water as it accumulates, is kept pure by the foul air being drawn in the wind-bore, and thus pumped out with the water, atmospheric air replacing the foul air. I throw out these hints in the hopes that my fellow-Cornishmen will try reversing their machines for the sake of their workmen.

Cowbridge-road, Cardiff, Dec. 29.

STEPHEN TRESEDER.

RICHMOND CONSOLIDATED MINING COMPANY.

SIR,—Many weighty considerations induce the irresistible conclusion that even yet the shareholders are unaware of the real financial condition of the company, nor is it by any means evident they are more reliably informed of the position of the mine. We do not know what we owe our bullion agent, but we do know the usurious interest we have to pay; we do not know whether for the accommodation other arrangements have been made besides loaning the ore in order to satisfy the agent, nor does even the board seem to be aware whether the ore on the dump, valued in the balance-sheet as an asset, is the property of the shareholders more than is the bullion. Extraordinary was the statement of the Chairman at the meeting that the "dump ore was selected ore." The Chairman has told us upon previous occasions that he has made the Richmond Mine a special study, and, therefore, is perfectly familiar with its every detail. Strange, then, was it to find that upon this most material point our Chairman was entirely at sea. "Gentlemen," said our Chairman, "the dump ore is worth so much, because all its expenses have been paid, and the greater value because it has been selected." "No," said a gentleman on the directors' side of the table, "the ore on the dump is as when taken from the mine—I won't allow the shareholders to be led astray." "Well," said the Chairman, "I understood it was selected ore!" As a straw indicates the way the wind is blowing, so does this significant episode throw considerable light upon the "accurate and detailed information the board possesses."

To require—not to say demand—further information upon several questions is a duty we owe to ourselves. That of the available reserves in the mine, the sole representative of our capital, is most unsatisfactory—first we are told that Mr. Rickard could not confirm the estimate of Prof. Price; then when Mr. Rickard had conferred with the Rev. Mr. Probert the estimate in question was not considered excessive, that although limestone had been found where ore had been estimated, subsequent developments had made up the discrepancy, and that Mr. Rickard's computation forwarded in reply to a telegraphic enquiry of the board had not been published, because Mr. Rickard had not understood the manner in which Prof. Price had arrived at his conclusion. Can "confusion be worse confounded?" Will the directors tell us, with their collective information, what our reserves really are? Who is right—Mr. Rickard, Rev. Mr. Probert, or Prof. Price?

The only experienced practical miner who has given an opinion is Mr. Rickard, and that is the only opinion entitled to respect. We all know too well the value to attach to the statements of professors. If there are any who do not, they may be referred to Prof. Silliman, on the Emma Mine, and to Prof. Clayton, on the mines of the Utah Company. Some, too, may recollect that when the Rev. Mr. Probert returned to this country from an inspection of the mines of the Utah Company, the extraordinary value the reverend gentleman put upon them, and undertook to make them a marvellous success, provided he had the management of the furnaces. The reverend gentleman was subsequently offered all he desired, but declined. In Professors

Silliman and Clayton we have two most splendid theorists, but Prof. Price has had experience, but not in vein mining; so that the only practical opinion yet expressed is that of Mr. Reuben Rickard. Do his weekly reports confirm the inflated statements previously made? Further, do the weekly returns confirm even his own reports?

A requisition should be at once sent in to the directors to convene a special meeting to ventilate these vital questions—otherwise, I fear, our property will become more and more into discredit.

Jan. 3.

A SHAREHOLDER.

CORSICAN MINES.

SIR,—In glancing over the *Journal* of Jan. 1, I notice under the heading of Foreign Mines that two companies, named respectively the Lama Company of Corsica and the Olmeta Copper Company of Corsica, are making their first shipment of copper ore to England. As the notice is headed the South Aurora Consolidated Mining Company, I presume the above-mentioned companies are its property, or at least under its managements; if this be so the South Aurora Company is to be congratulated on having secured what I cannot doubt will prove valuable properties.

Knowing Corsica and its mineral resources, I have often expressed surprise that British capital has not before this been attracted thither instead of being gulled by promises of fortunes from El Dorados so much farther from home. Corsica is at present an almost untrodden field for English mining enterprise, and being a French possession, its mines are worked under the mining laws of that country, which are well known to be superior to those of any other.

London, Jan. 4.

MINING ENGINEER.

EXPLOSIVES IN MINING—LIME.

SIR,—It seems to me from the remarks lately made in different places that gunpowder is condemned as an explosive for mining purposes, being the cause of so many accidents. Now, it has occurred to me that lime at the time it is being slaked, having great expansive force, might be substituted for any other explosive, although it is slower in its destructive properties. I have myself seen huge granite boulders of more than a ton weight split up by the use of lime. The method of using it is as follows:—A hole is made in the ordinary way where the cleavage is wanted, and balls of unslaked lime thrust down it to the bottom, and just sufficient water is then poured in as will slake every tamping. This will take up two-thirds of the hole, which is then filled up with good tamping-stone. The tamping and subsequent filling up of the hole should be done as speedily as possible, that the lime may exert all its force. It does not burst the rock as does powder, but so cleaves it that a wedge may be put in, and the stone thus forced down. This seems to me to be one way of cleaving which is most effectual, and at the same time safe for the miner.

Cowbridge-road, Cardiff, Dec. 30.

STEPHEN TRESEDER.

OUR MINERAL DEPOSITS, AND HOW TO FIND THEM.

SIR,—I see that Mr. John Lean, in the *Journal* of Nov. 20, has made some very decided remarks—positive statements—respecting mineral deposits. I consider it advisable before we proceed further to come to a right understanding respecting this important subject, and to be enabled to do so I respectfully request Mr. Lean, also those gentlemen who were pleased to differ with me in the matter of "my (as Mr. Lean has been pleased to designate it) intersectory junction theory," at the recent meeting of the Royal Cornwall Geological Society at Penzance, to name the mine or mines in Cornwall where a rich or productive lode has been seen and worked on without a junction or "secondary element" influence, which will enable the jury of miners now impaneled to test the case to give a correct verdict on it.

Mr. Lean will be surprised to learn that I have a few of the best practical miners in Cornwall my supporters in the above-named theory. It has been known to some few for years past, and they have benefited by it. I consider what is for the general good should be universally known, and this is my excuse for "cropping up again and again," that all may participate in it.

With respect to the length of a sett, Mr. Lean, if he is a miner or knows anything about mining, must be aware that the influence of the junction (if the lode is large and well defined) continues for scores of fathoms in length; how, then, about the sett of 12 feet? Why, he must be aware that he has made some very strange remarks, and, indeed, made assertions he cannot prove. I had really hoped to have seen in your widely circulated *Journal* a letter quite the opposite to Mr. Lean's, to assist in removing the dense fog existing among miners; but really Mr. Lean's production has a tendency to increase rather than dispel the vapour existing. We want, if possible, to clear the atmosphere, and place a chart in the hands of our mine agents, after which, it is to be hoped, we shall not hear of so many and heavy losses.

I have taken time to reconsider my statements since reading Mr. Lean's production, which differs so widely from anything I have ever met with or heard of that I was induced to visit a few of our mines, and also to communicate with various mine agents of respectability and practical knowledge on the point in question, and they have all given it against Mr. Lean. I am quite at a loss how or from what quarter Mr. Lean will be enabled to make out his case, and, at the same time, prove to the world that he is a miner. He states in his production that I am not a miner; I have not stated that I am a miner in the paper read, and I fail to see the necessity for a person to be a miner to benefit mining, neither would it require a person to be a sailor to condemn the proceedings of a merchant who was about to dispatch his craft to sea without rudder, chart, or compass. Mr. Lean will please also inform us where or by what junction the lode formerly rich was made poor or killed by the junction, and also, if those things are "beyond the final grasp of man," how come he to be acquainted with it; is he more than man?

Hayle, Jan. 4.

JAMES WILLIAMS.

DOWSING, ETC.

SIR,—In the *Journal* of Dec. 18 I notice a letter from someone calling himself "A Miner," asking whether the ore in the De Broke Mine was shown us by an "Old Resident," and if the ore was cropping out to surface? The ore was not cropping out at surface, but, as I stated in my letter, reaching up to the grass roots. The "Old Resident" probably found stones of lead at times, for we found several good shoddy of lead at a distance from the lode, before we found its course, but he did not know where the lode was, and expressed as much surprise as anyone when its back was laid bare within a few yards of the house. But even if he had known it, and shoddy of ore were found at surface, it would not in any way alter the fact—that we had traced and found the great lode in sufficient strength to be productive, and thus established the De Broke Mine, and as I made a clear statement in my last letter on the subject I shall leave "A Miner" to draw what inference he pleases as to whether we arrived at the knowledge by the use of the dial, or by aid of the "Old Resident's" three-legged stool. But if he is "A Miner," and has made the district so much of a study as I have, he will be able to stand on the Prigant range, and lay down the course of the Frogoch lode in the high ground, from Llanafau to the west, to the Dolwen mountain on the east, a distance of from seven to eight miles. But it does not follow that it can be found in the hill sides and valleys so easily, or that it will be productive when found, or even easily to be recognised in certain places.

I know several places in that district where the lodes are strong to surface, and the ore easily disclosed. Some of these have been bleaching in the sun and rain for generations, and are probably known to many an old resident, while others, as far as I know, are marked in my note-book only. And when this unquestionably rich, but of late unfortunate district, shall emerge from the cloud hanging over it, through the ignorance, misstatements, and too general misdirection of capital to which it has been subjected by a set of people who gull the public by professing to be miners when they have not the shadow of a claim to the title. Either Capt. Mitchell or myself will most likely introduce more healthy young mines for the investing public, and we may again hear the enquiry from some would-be-wise miner, did they get their information from an old

resident? But to return for a moment to the subject of dowsing. Although I have not in the 30 years I have studied the subject seen anything that would induce me to pin my faith to it I may have drawn wrong conclusions, and we may yet learn why the rod is affected in some people's hands, and how "A Miner" thinks that Captain A. Francis should come out stronger. Now, Captain A. Francis's sound practical skill is well known, as well as his earnest desire at all times to promote the interests of mining, and I think "A Miner" could ask him for information with a better grace if he were to put his name to his communications. CHAS. KNEBONE, *Snowdon, Dec. 29.*

SEPARATION OF LEAD AND BLENDE.

Sir,—Having read in your valuable Journal two letters on the above subject, signed Thos. Ellery, wherein he states he is a practical dresser, I would like to know (if he is able to separate lead from blende and other refractory minerals) why he is compelled to dress Old Treburgett ore in two parcels? Some time since Capt. Hancock published the assays, which showed a difference of 20 per cent. of lead in the two samples. Perhaps Mr. Ellery will inform your readers "what causes this." Is it not that it contains either blende, sulphur, or white iron—perhaps all three? H. B. V. *Scotland, Jan. 4.*

MANGANESE MINING—1874-75.

Sir,—The past two years of manganese mining in Devon, like most of our other mine operations, have been barren of discoveries, although large sums have been spent in opening some old and excavated works. The long and everlasting adit at Bowden Hill, Lamer-ton, after but opening a few fathoms, enters the hard blue slate-rock formation, interspersed with hard quartz veins, fatal to manganese deposits. It seems our neighbours here go in for deep manganese mining. Is not this an error? Bowden Down has of late been looking up, and some rich ore has been brought to surface. The enterprising proprietor of this property seeks the shallow deposits, and no one deserves success more than he does. I hope the year 1876 will see him well established in those works.

The old Langstone, or Devonshire Manganese Mines, has been a heavy loss to the promoters. It is now, I am informed, abandoned, and, I think, with more caution, and with less flowery reports of the state and value of the old concern when worked 35 years ago, much money should have been spared. The then owner or proprietor, the late Mr. Ferney, spent such large sums in searching for new deposits as to satisfy all practical men that the main deposits had been worked out, and that the deep workings of the mine had, like others of the district, entered the hard slate formation fatal to manganese. This has been clearly demonstrated again and again, by the fact of the "deeper you get the harder the rock." Our neighbours, the proprietors of the rich Hogston Mines, know when and how to avoid those losses. The late Mr. Ferney, who had been successful in Langstone and other shallow mines, spent many thousands in certain deep trials, and I well remember his strict orders—"When you enter the blue rock let me hear of it, so that no more may be wasted." One is surprised, at the present day of great knowledge and geological experience, to find there are practicals who still persist in searching for manganese both in the hard slate formation and also in depth. I would ask where is this to be proved, and does not 99 out of every 100 of those trials fail? Langstone is a clear case in point. Bredestone district is yet in its infancy, and one wonders why so much is lost in the old exhausted properties in preference to opening new and shallow works. A few hundred pounds would make a fair trial in many cases, but this is run over in preference to caution. Some old mines seem to be in favour even to sell, regardless of their merits, and certain loss to its proprietors.

—CORRESPONDENT.

HORIZONTAL CONTINUITY OF LODES.

Sir,—In the Journal of Dec. 25, there is a remark by an officer of Her Majesty's Geological Survey which favours a theory I have held for some time. My personal observations lead me to conclude that as regards a large number of metalliferous veins they do not continue indefinitely in length, and moreover, that some of them terminate after extending a comparatively short distance. What is sometimes seen on some of our water-worn beaches, with miniature lodes running in all directions, come to an abrupt or gradual termination, is, I apprehend, an epitome of many mining districts. I am aware that there is a great diversity of opinion on the subject, and it would be interesting if some of your correspondents would furnish all the data at their disposal both "pro" and "con." J. B. *Isle of Man, Dec. 31.*

GOLD IN WALES—No. XIV.

DOLGELLEY DISTRICT—CAMBRIAN SECTION.—(continued.)

The Prince of Wales, or Hafod-y-Morfa Mine (Llanelyd parish), is bounded by the River Mawddach on the south, and by the West Prince of Wales Mine on the west. The turnpike-road from Dolgelly to Barmouth intersects the property, which contains an area of about 200 acres. Some black blende has been found here of marvellous richness, a specimen found by myself is in the British Museum. To this mine attaches the credit of having had by far the most plucky set of adventurers of any mine of the whole district. Most of them were genuine Sheffield blades, and richly deserved the completest possible success, although they were destined not to get it.

Mr. St. Pierre Foley, C.E., and M.E. (1846), reported:—"The presence of gold, with bloom-spar in this mine, and about 1½ ton of quartz, &c., through which gold is abundantly disseminated. A lode full 4 ft. wide, rich in silver lead, accompanied by some blende and gold, seen by the naked eye, in several parts of the lode, and along the bottom of the shaft for 6 ft. in extent. So far my former opinions, though doubted by some, and unnoticed by former parties particularly interested at the time in these mines, are now realised. I mention this matter by way of episode as deserving the attention of parties who, in sometimes obtaining reports or advice from those whose judgment and honour are reliable, use certain parts of these reports as necessary for particular purposes, and reject the most valuable division or points as ideas only of the reporters."

Mr. Evans Hopkins, M.E. (1856), wrote:—"The geological formation of the Dolgelly Valley is clay-slate on the north, and rocks on the south. The former is composed of chloritic and light grey beds, which are generally more or less metalliferous. These beds dip to the south, and are cleared in a north-east direction, and the lodes intersect the series in an east and west line. The set is in a steep declivity of a mountain, where the lodes may be easily developed by means of cross cuts. The backs of these lodes have been worked on by the Romans, and considerable quantities of lead have been extracted from time to time. The lode itself obtained by sinking below the deep level is composed of very good metalliferous lead. I should recommend that the backs of the lodes be explored over the whole set, and cross cuts driven at those points where they may present favourable indications; arrangements may then be made to carry on the mine properly, and adits driven from the bottom of the valley. This would avoid unnecessary outlay on the one hand, and ensure success to the extent of the capabilities of the property on the other."

Mr. St. Pierre Foley, M.E. (1851) wrote:—"There can be no hesitation whatever in proclaiming this mine as one of the very highest productive order. It extends on the range of the lodes east and west for the distance of about a mile. The activity of the mountain in which these lodes are is on the same line of bearing with the lodes themselves, and forms an angle of about 60°, so that levels driven at different distances along the side of the mountain will cut the lode most advantageously for working the mines to an immense extent, and no machinery for unwinding the mines above river level will be necessary. The lode at present working is indeed splendid lead ore, composed of fine silver-lead ore, containing 38 oz. of silver per ton by assay, quartz and blende as matrix ore, in silvery bluish grey kilas, which rock itself contains silver-lead in minute parts. From a few fathoms working on this lode several tons of ore have been extracted. Several other lodes on the estate have been discovered, all bearing rich silver-lead ores almost to the surface."

Capt. F. Treweek (1851) wrote:—"The parallel lodes that have been discovered are not many fathoms apart from the main lode, and from their more rapid dip will, I expect, unite with it in depth, and, consequently, tend to enrich it. I am not naturally sanguine in mining enterprises, but in the present instance I must candidly confess, from the unusually flattering prospects, I cannot but consider this mine one of the best speculations in the Principality."

Capt. F. Symonds (1855) wrote:—"In a little time 20 fms. of ground will be laid open below the gold sink, and as the quartz veins are improving in depth, good results may be obtained on opening the lode. The best part of the mine will be east and west from the junction."

Mr. St. Pierre Foley (1856) wrote:—"This mine lies in clay-slate of a striking character. It has in general a pearly or micaceous appearance, and is similar in every way to that of colour to the kind blue kilas in Cardiganshire and other silver-lead districts. Some of the porphyritic dykes, or what may be understood, as clay dykes, or courses, show themselves here and there in this mountain, and one, of a massive nature, has been worked on in the lower level for some fathoms, which well deserves future notice. The main lode, or what may be now called the gold lode, was worked on about 10 fms. over the present level, and about 70 or 80 tons of very rich silver lead ore, with blende, were taken from it in a few fathoms, and from which, particularly in the blende part, I feel certain we shall have a large portion of gold on separation. This lode is found very wide in some places along the side of the mountain, composed of massive quartz at and near surface, and

holding that character even to the very bottom of the mine, but changing its character occasionally from white to a slight bluish purple. The gold is found not only in the bluish coloured quartz, but in the white vitreous description, and even in the very heart, as it were, of the rock itself. It appears to run in a linear spangled order, east and west, particularly when blende prevails, sometimes in parallel lines of particles of gold to be easily seen by the eye alone, but here and there with larger nuggets, or particles of the size of pine heads. When larger globules of gold occur I have remarked them to be surrounded with numerous minute grains, all as it were, tending towards the larger as a centre. When the gold prevails in a very minute way in the blende the mass appears of a faint yellowish brown appearance, and in such cases the particles of gold can only be distinguished by a powerful eye-glass. In the present state of these mines it is, of course, impossible to speak authoritatively on the produce to be obtained of the gold, or the extent of its field of bearing, but we may conclude from analogical grounds, assisted by conclusions drawn from repeated examinations, inspections, and surveys of the gold range of this country, that the ratio of productiveness is in its favour. At some 80 fms. higher some cross-cut adits and drivings appear open for some fathoms. These works are locally called the 'Roman Mines.' I have observed strong indications of gold here also, and feel no hesitation in placing an opinion on record at present that before three months, on opening these mines as I have directed, gold will be found. The lead ore of these mines is somewhat peculiar. Its crystals are like plates of mica, and reflect the light rather brilliantly in rays of great brightness. To distinguish it from other silver-lead ores I have named it micaceous silver-lead ore. It is found in other parts of Merioneth; its average assay produces 78 per cent. of lead and 36 oz. of silver to the ton of ore. I cannot but draw attention to the extraordinary results of an assay made last week of some of the quartz taken from this mine, and given to Mr. Byers for that purpose. This sample produced gold in the proportion of 952 ozs. per ton of quartz. Now, not regarding the extra weight which the gold must produce in addition, or mixed state, the specific gravity of quartz alone is 2.5, and therefore, it is easily calculated that a fathom of a lode of such gold quartz as the sample assayed—6 ft. by 6 ft., and 4 ft. in breadth—would actually produce gold, calculated at 4 per ounce, equal in value to 38,080 sterling, which can easily be raised, crushed, &c., for 100. Our own dear native home, therefore, for ever."

MEMORANDUM, Aug. 28, 1862.—Mr. HOBSON, of Sheffield, wrote me:—"We put a little over 6 cwt. of quartz under the stamps, from which we got out 17½ cwt. of gold."

Capt. S. Jones (Aug. 1863) wrote to the directors:—"I hand you a piece of 9½ dwts. of gold which I have extracted from 12 cwt. of your quartz not containing visible gold. You will now perceive what a most valuable property you have. I congratulate you and myself on good and successful results."

MEMORANDUM, Feb. 13, 1864.—Mr. F. BENNETT, at the Bagillt Zinc Works, made me the following experiments on ore from this mine:—

Blende ore..... 80 per cent., assay 35 per cent. zinc, 9 per cent. lead, 1 oz. 6 dwts. silver per ton; traces of gold.
Lead ore..... 13 per cent., assay 57 per cent. lead, 15 per cent. zinc, 8 ozs. 6 dwts. silver per ton, 9 dwts. 8 grs. gold.
Copper 1 per cent.
Slime 6 per cent. contains zinc (not estimated), lead 16 per cent., sil-
ver 1 oz. 10 dwts. per ton, gold traces.

Analysis of value of each ore:—
Blende ore, 80 per cent. = 16 cwt., at 21. 10s. per ton £2 0 0
Lead ore, 13 per cent. = 2½ cwt., at 14s. per ton (57 per cent. metal-
lic lead, less 7 per cent. loss, = 50 per cent., at 20s. 10s. 9 dwts.
8 grs. silver, 2½ cwt., at 8s. 8 dwts. gold, 1½ cwt., at 14s. 15 0
Copper 55 grs. 31 ozs. 15 dwts. lead, 6-35 grs. silver—8 grs. 9 dwts. 8 grs. per ton
Slime 6 per cent. = 12 cwt., at 10s. 12 0

Total value per ton raw ore, as sample forwarded £12 16 6
The sulphur, estimated at 38 per cent., is mixed with the blende, lead, and slime. The slime is not valued, but with care in preparation may be worked advantageously.

¾ cwt. (avoirdupois weight) of the lead ore reduced in crucible experiments the following were the result:—

From 1 lb. = 16 ozs., 9 ozs. 2 dwts. metallic lead, 1-92 gr. silver, 10 gr. gold; from 2½ lbs. = 40 ozs., 22 ozs. 13 dwts. metallic lead, 1-43 gr. silver, 25 gr. gold; total, 3½ lbs. = 55 ozs. 31 ozs. 15 dwts. lead, 6-35 grs. silver—8 grs. 9 dwts. 8 grs. per ton of ore; 35 grs. gold—9 dwts. 8 grs. per ton of ore.

Silver..... 3 ozs. 9 dwts. 8 grs. per ton lead ore } Mean result.
Gold..... 10 grs. 10 dwts. 8 grs. per ton lead ore }

Mr. Belt (1845), wrote:—"1. The Machinery: By the substitution of new gearing the effective power of the water wheel was increased fully 100 per cent., so that whereas before the stamps could only be lifted 35 to 40 times per minute, they are now lifted 70 times per minute, and the revolving barrels, which were driven by the steam-engine, are now fixed to and worked by the water-wheel. In the place of the slow and costly method of dry stamping and barrel amalgamation, wet stamping and mercury troughs have been adopted. Below the troughs blanket-tables have been placed, the concentrated stuff from which has been treated in the revolving barrels. The stamps, the winzes, the water, the amalgamation, and the blanket-tables, each fathom produces from 10 to 12 tons of quartz. The water was contained between two joints cutting through the lode and dipping eastward, one being to the east and the other to the west of the winze. These joints are 6 fms. apart in the adit level, and 9 fms. apart below where we are working the gold shoot—the lode or underlie of the eastern joint being much greater than that of the western one. These joints are important, as having an evident connection with the occurrence of gold. The shoot on which we are now working lies immediately under the eastern joint, formerly worked at the western one, although I have not as yet found it there. Excepting where the gold is now being stamped, the eastern joint has only been cut in the adit level, and as at the time that level was driven the mine was not worked for gold, it is not unlikely the gold shoot was passed through without being noticed. To clear up this point I have sent men to work in the roof of the adit level, and I fully expect that they will cut the gold shoot there. If we succeed it will be seen by the plan that we have 13 fms. of untouched ground above the adit which can be mined with great economy. We are also driving east in the 23, for the purpose of cutting the eastern joint, with, I hope, the result of the first week's stamping of the bulk of the quartz led to serious doubts of the existence of gold throughout the lode in paying quantities, and the continued trials made since have convinced me that it is concentrated in the gold shoots, and not disseminated throughout the mass. I am aware that a different opinion is held by the managers of other mines in the district, who blame the processes in use and not the lodes for the non-production of gold, but I do not know of a single fact contradictory of their opinion, and our own experience has been entirely in favour of the latter. The winzes, the stamps, the amalgamation, and the blanket-tables, each fathom produces from 10 to 12 tons of quartz, which yielded gold 17 ozs. 11 dwts., and 2 cwt. 20 lbs. picked quartz from gold shoot, which yielded 8 ozs. 6½ dwts.; total, 25 ozs. 17½ dwts. It thus appears that though the bulk of the ore is poor in gold there exists in the mine shoots or strings of ore of unquestionably great richness, and the future prosperity of the mine (as a gold mine) will depend on the vertical extent of these shoots, a point which the operations I have mentioned in my account of the mine will in a few weeks determine."

Mr. T. Belt (July 18, 1865) wrote to the directors, as follows:—"In my last report I informed you that we had determined that the gold was not, as had been believed, distributed throughout the lode, but was concentrated in bunches and strings. The number and extent of these was quite a matter of conjecture, but it was confidently expected that others equally as rich as those that had been cut would be met with in the course of the workings. Up to this time these expectations have not been realised, and continued experiments on the bulk of the quartz have confirmed the opinion of its general poverty in gold. No shoots of gold having been met with, only 2 cwt. 14½ dwts. of gold have been obtained, mostly from the tailings left by Mr. Moore. We crushed 12½ tons of quartz, containing galena and blende, and placed in store 5 tons of lead ore and 3½ tons of blende. In the mine all our efforts have been directed to discover fresh shoots of gold. Those formerly found were in connection with two joints traversing the lode, but although the ground in the vicinity of these joints continues more highly mineralised with galena and blende than elsewhere, no visible gold has been met with. In the stope above the adit we had up to the end of last month stopped 25 fms.; this stope is carried from the eastern to the western joint. At first the ground was very barren looking, but during the last two months it has gradually improved, and is now especially near to the eastern joint, and I still think it likely that we will cut gold in this stope. Below where we got the gold last we have topped 16 fathoms of ground down to the 23 fm. level. Not finding the gold either above or below the place where it had been found before so very rich, the next consideration was whether it might not occur on the same level either east or west. A level had been driven east for 14 fathoms, and we are now driving west. In about 4 fathoms we will reach a sink from the adit, which we stopped on account of water, but which the level we are now driving will drain. On the surface of the back of the lode we have taken down a cross cut of 30 fms. of lode, through which there were lumps of lead ore and blende, but no visible gold. We have now pumps ready to unwater the mine below the 23 fm. level, but owing to the very dry summer the water at the reservoir has failed us, and we will not be able to get the water out until we have some wet weather."

The Directors (July 31, 1865) reported:—"Mr. Belt, the present manager, having shortly after his appointment struck into a rich bunch of gold ore, we had good reason to hope that the shareholders would here now have been dividing profits. The gold ore, however, unfortunately was very poor, and the lead ore continued poor, and though every effort has been made to again cut the gold it has not yet been done, and the yield of lead has been so small as to be scarcely worth naming; indeed, the opinion of the best miners seems to be that to find the lead in a remunerative quantity we must go to a much lower level than we have ever yet done. We have paid off all the men except the miners, who were kept at work to endeavour to find the gold strings again, and though thus far without success, still there is little (if any) doubt of its being done by a further expenditure of money and time—in truth it may be cut any day."

The mine was eventually abandoned.

I saw at times extraordinarily rich auriferous blende at this mine in 1862, and exhibited some specimens at the International Exhibition of that year. I have good reasons for believing that a great quantity of rich ore was stolen from this mine prior to 1862. I saw one day a piece of blende weighing 3 or 4 lbs. sold by a man for 5s., worth 10s. at the least, for it was rich in gold. This piece was afterwards broken and made to do duty as samples found on other Crown sets. The attempt was more than once made upon myself, and on one occasion I literally pocketed the affront, and have kept the specimen to this day, and a beautiful one it is. Somebody had this mine to do what he liked with for a month or two. I saw some hundred weights of the ore which he had brought into Dolgelly to "a place where they fine gold," and I was allowed to fill my satchel from the heap for "standing a bottle of wine." There was nothing wrong with this gentleman's proceedings that I ever heard of, and I fancy he ought to have got at the least 200 ozs. of gold from what I saw. The company in 1864 appears to have sold gold for 243s., and in 1865, 336s. Value of the gold about 76s. per ounce.

I have given details of this remarkable property at considerable length because, as will be seen by Mr. Belt's reports, it was honestly and openly managed for a time by one who evidently knew what

he was about, and who never withheld any portion of the truth from those who sought it. I dropped some money in the adventure. I considered that the results of this mine would determine the value of similar mines of the district, and so it did. I may say here that I am entirely in accord with Mr. Belt. There occurs sometimes marvellously rich gold in shoots, and in connection chiefly with sulphide of zinc, but that nine-tenths of the lode-stuff is utterly valueless. I deliberately write down this observation for the whole of the quartz lodes of the district, and without any exception. But there is gold in "places," and sometimes a lot of it. The question is—"What is the value of the remaining tenth part of the quartz lode, and is it worth bothering about?" This point I propose to treat somewhat at length when I reach the Cwmshaisan gold district, in which the gold occurs for the most part in sulphides of lead, zinc, and iron. *London, Jan. 5.* T. A. READWIN.

MINING IN CARDIGANSHIRE.

Sir,—The New Year has begun, and I hope it may prove a more successful one than that which has just passed away. I would, with your permission, Mr. Editor, bring before the readers of your wide-spread Journal, a few remarks upon two or three mines, as I saw them yesterday, and I trust those connected with them, both proprietors and agents, may look over any mistakes I may unknowingly make. Mynydd Gorddu Mine is the first I lighted upon. I found the agent (Capt. Rouse) at his post, and all hands at their several places, working away to fulfil the duties of the day. In the first place, I visited the upper shaft, and saw the lode peeping up today—such a sight I hardly ever saw before. The lode is about 3 to 4 ft. wide, and for the length I could see of it I should think to be worth from 1200. to 1500. per fathom—a splendid lode. This shaft has been sunk about 22 fms. from the surface, that is 8 fms. down, where a cross-cut has been driven in again 12 fms. to another level, and also 2 fms., the beginning of another lift. This shaft should be continued so as to be 30 or 40 fms. deep, where the lodes may then be seen to a far greater advantage than at present. In sinking the shaft they unexpectedly met with the south lode not known before, consequently making the property of greater value. The Champion or north lode dips south, whilst the south lode dips north; so that by the time the shaft has been sunk to the 39 fm. level two lodes will have been sunk through, and the junction thoroughly opened upon. I should mention that at the 20 fm. level a cross-cut was driven, and intersected the great north lode. A level has been driven both east and west about 20 fms., both ends in very promising and highly mineral ground. An adit has been sent into the lode from the side of the hill, through which they bring all their stuff and water to surface. Eight fathoms to the east of surface a winze has been sunk about 7 fms. in the south part of the lode, leaving the best and most ore part standing to the north to take away by stopping. There are three stopes in the back, but in consequence of ore being so full of stuff, two only are being worked for the present; worth for ore about 250. per fathom. The machinery on the surface is working admirably, cutting away to bring a parcel of 20 tons of their good quality lead soon to market, near half of which I saw in the bin already. I should say they will get from 18s. to 19s. per ton. There is a new mine being started to the east of this mine, called the Bow Mine, about six miles to the east of Bow-street Station; and the sett, which is considered a highly valuable one, is about a mile square—ground enough to try all the lodes known to traverse the sett, as well as others that may be met with throughout their exploring operations. The Mynydd Gorddu, the Champion level, as well as a number of others, traverse this new taking. I trust they may meet their reward, and soon bring it into the market; that at my next coming I may find them as fortunate and as busy as those of yesterday."

My next will be the Edgar Mine, which adjoins the Mynydd Gorddu, and is within a very short distance of each other on the same lode. Here a considerable amount of work has been done, the lode has been wrought upon for upwards of 60 fms. east and west, and without doubt one of the finest lodes now to be met with in the county. Why this lode is not being worked for blende I fail to see; for 40 fms. in length it will yield 4 tons to the fathom, and in a careful and moderate calculation will yield in addition from 15 cwt. to 1 ton of rich lead per fm. An excellent shaft has been sunk from surface to a depth of 22 fms., and a cross-cut driven in 11 fms. towards the lode, but the water mastered them all just entering the lode. A water-wheel and the necessary pitwork will shortly be erected to cope with any quantity of water, and I do not doubt of the success of the company. A more legitimate and promising speculation than this mine indicates is rarely to be found. I thought whilst travelling over the above-named mines what a great benefit the latter would be to the former, as the Edgar deep adit level running into the Mynydd Gorddu Mine would be about 50 fms. deeper than the present workings of this mine, and do away with so much pump, rods, in fact, everything that could be mentioned, but they are two different companies. The present eastern end in the Edgar adit level is within 80 fms. of the boundary between the two mines. Consider, then, the value of these mines only as yet one level deep—no level alone having as yet been driven in either of them, I hope they may do well, in fact, they must do well from present appearances. Trace this lode from the beginning of times as far back as the Old Hagar and Henfwich Mines, far away eastward, where nothing but gossan and lead, &c., can be found for scores of fathoms east, west, north, and south. I find I am about to lose an old mining friend, Capt. Hodge, who is going home to Cornwall to manage some of the mines there. I hope he will be successful, although he may feel leaving this healthy country. Yes, it is promotion all look forward to. *Rheidol Cottage, Jan. 5.* SAMUEL TREVEATHAN, C.M.E.

[For remainder of Original Correspondence, see to-day's Journal.]

FOREIGN MINING AND METALLURGY.

Continued depression still characterises the Belgian iron trade. There is nothing fresh to report with regard to prices, or with respect to the general aspect of the trade. A covered iron market for live stock at Antwerp has been contracted for by M.M. Nicais and Delcuve, of La Louvière, at 5316s. M. Alid r Migeon, of Gand, has also obtained a contract for the ironwork of a new covered market at Gand, where, it should be stated, M. Migeon carries on business. Contracts are about to be let for 20 locomotive tenders for the Belgian State lines. A new rail-rolling mill at Seraing has been working with success for some time past. It appears that girders of rolled iron are now made by seven or eight Belgian works—the Cockerill, the Sclésien, the Bonchill, the Providence, the Acroz, the Couillet, the Clabecq, and the Alliance.

Deliveries of coal have continued tolerably regular in France, both by railway and canal. All those who require coal at present rates in France during the current winter will, however, in all probability be promptly accommodated, as business is not likely to present any very great animation.

A strike continues among the working coal miners in the Centre of Belgium basin. Some collieries have, nevertheless, been able to resist the contagion of this labour difficulty, and have continued in regular working; even in these collieries, however, the men appear to be wavering. The moment for a strike does not appear to have been well chosen, as the demand for domestic and industrial quantities of coal is not very active at present. Quotations for coal have scarcely varied in the Belgian basins during the past week. German gas coal may be obtained on trucks at Liège at 16s. 1d. per ton; washed Westphalian coke for foundry purposes is also offered at Liège at 14s. 9d. per ton. In the Charleroi basin a somewhat reduced extraction is regularly disposed of; there are complaints, however, of inadequate supplies of rolling stock upon the local railways. The deliveries of coal from the Couchant de Mons in the last ten months of last year presented a diminution of 81,678 tons, as compared with the corresponding period of 1874.

Quotations for copper at Paris have exhibited some feebleness. Chilean bars have made 84s. 16s.; ditto, ordinary descriptions, 83s. 12s.; ditto in ingots, 88s.; English tough copper, 86s.; and pure Corocoro mineral, 84s. per ton. The Marseilles copper market has been quiet, and without much business. There have been scarcely any transactions in copper upon the German markets, and prices have been almost nominal. The Paris tin market has been quiet, and prices have exhibited some heaviness. Banca, delivered at Havre or Paris, has made 90s.; Straits, ditto, 88s.; and English, delivered at Havre or Rouen, 86s. per ton. There has been no great amount of business passing in tin at Marseilles. The German tin markets have also been quiet. At Rotterdam Banca has made 50s. 10s.; and for future delivery, 50s. 10s. Some small sales of Billiton have taken place at Rotterdam at 49s. 10s. Lead has attracted some attention at Paris. French, delivered at Paris, has made 23s. per ton; Spanish, delivered at Havre, 22s. 16s. per ton; English, delivered at Havre, 22s. 16s. per ton; and Belgian and German, delivered at Paris, 23s. 4s. per ton. Lead has ruled firm at Marseilles. The tendency of the German lead markets has also been favourable. Quotations for zinc have been supported with firmness at Paris. Silesian, delivered at Havre, has made 27s. per ton; other good marks, delivered at Havre, 26s. 16s. per ton; and ditto, at Paris, 26s. 12s. per ton; Vieille Montagne rolled zinc in sheets continues to be quoted at Havre at 34s. per ton. The German zinc markets have been well maintained, but there has been little business passing upon them.

There is no improvement and but little change of any kind in the French iron trade. Some attention has been directed to experiments illustrating the effects of cold upon steel rails which have been made during the last few days upon the North Austrian Railway between Florisdorf and Wagram. These experiments are stated to have been attended with results rather adverse to steel rails, the general utility of which remains, however, of course unaffected. A compressed air-engine has been tried with success upon the North Parisian tram-

ways; the engine is stated to have been perfectly and readily under control. The directors of the Rodange Blast-Furnace Company state that the company has now completely finished two furnaces, but that they have not been brought into operation in consequence of the indifferent state of the iron trade. The directors are continuing to work the company's mineral bearings, and they are constructing an industrial railway from Petange to the frontier of France. The company has obtained from the Luxembourg Government a concession of 50 acres of minerals in consideration of a rent of 6000 per annum to be paid for a term of 50 years.

Meetings of Public Companies.

COLONIAL BANK.

The half-yearly court of proprietors was held at the London Tavern, on Thursday. Mr. T. D. HILL in the chair.

The report stated that the directors had now to lay before the proprietors the statement of debts and assets of the incorporation on June 30 last, which also exhibits the net profit made during the half-year then ending, viz.:-

DEBITS.	
Circulation	£ 432,401 5 10
Deposits, bills payable, and other liabilities	2,885,965 3 8
Paid up capital	60,000 0 0
Reserve fund	407 15 3
Balance of profit from last half-year	47,590 14 10
Net profit for the half year	£ 4,046,364 19 7
ASSETS.	
Specie	£ 234,095 5 5
Due to the bank in the colonies, on bills discounted and purchased (including those past due), &c.	1,621,245 9 9
Due to the bank in the colonies, on current accounts	51,821 15 11
Due to the bank in London, on bills remitted, cash at bankers, &c.	2,094,018 0 11
Bank premises and furniture, in London and in the colonies	10,284 7 7
Total	£ 4,046,364 19 7

The directors have again the pleasing task of presenting a favourable report, as detailed by the preceding figures; the result would have been more satisfactory but for the continued depression in the sugar market, occasioned by the pernicious system of giving bounties on the export of sugar which still finds favour on the Continent. Under these circumstances the directors are gratified in being able to declare the usual dividend and bonus, and they, therefore, propose that out of the net profits shown above, amounting, after providing for all bad and doubtful debts and for income tax, to the sum of £7,500, 14s. 10d., a dividend of 6 per cent., and an extraordinary dividend of 1½ per cent. on the paid up capital, be made for the half year ending June 30, which will require £5,000, leaving 2598½, 14s. 10d., added to the balance from last half-year, 407½, makes 2998½, of which it is proposed to carry 2000½ to the reserve fund, increasing it to £2,900½, and the balance of 998½ to carry forward to the next half-year.

The CHAIRMAN said there was nothing to report beyond what had appeared in the report. Although the crops in the West Indies would not be so large as last year, the working of the branches was so satisfactory that he hoped they would again meet in July with equal pleasure. The system of fostering the beet-root sugar on the Continent checked the progress of the bank, inasmuch as it militated against the prosperity of a great many of its customers, and he thought it was very injurious for England, for by the Board of Trade returns last published they had imported over 5,000,000 worth of beet-sugar from the Continent, and last month they would have received 1,000,000 more, which may account for the adverse exchanges and the drainage of gold from this country. If more fostering care were bestowed by England the benefit would be here instead of the Continent. He then moved that the report and balance-sheet be received and adopted.

Mr. HENRIQUES (deputy-chairman) seconded the proposition. The report was adopted unanimously. A dividend of 6 per cent. and an extraordinary dividend of 1½ per cent. for the half year was declared. The retiring directors were re-elected. A vote of thanks to the Chairman and directors closed the proceedings.

FRONTINO AND BOLIVIA GOLD MINING COMPANY.

The ordinary meeting of shareholders was held at the City Terminus Hotel, Cannon street, on Tuesday.

Mr. THOMAS EYRE FOAKES in the chair.

Mr. GEORGE H. CARDOZO (secretary) read the notice convening the meeting.

The report of the directors stated that in fulfilment of the promise given at the last general meeting, the directors have taken the earliest opportunity of preparing and submitting for the approval of the shareholders the accounts and balance-sheet for the half year ending June 30 last. The profit for this period has amounted to £693½, and looking to what the mines have produced during July, August, and September, and to the prospects held out in the reports which accompanied the last monthly circular issued to the shareholders, there seems every reason to believe that the net profit for the year will amount to at least £2,000, and that that amount will be far exceeded by the produce of the mines during the ensuing year, when the Silencio Mine, from which a monthly produce of from 400 to 800 ozs. of gold is anticipated, and other of the company's mines will have become productive. The money due to Messrs. Bestrop, the company's bankers, at Medellin, has been paid off, and the mortgage deeds have been cancelled, and are now in the directors' possession. At the last meeting the directors promised that they would consider in what way the sum standing to the debit of the profit and loss account could be dealt with so as to enable them to appropriate, in payment of a dividend, the profits of the present year. Under the advice of the counsel who has been consulted, the directors propose that the auditor should be instructed to go through the profit and loss account from its commencement, to eliminate from it the items which are properly chargeable to capital, and to transfer these items to the capital account. As it is of importance that the sense of the shareholders should be taken at the meeting to be held on the 4th proximo, in reference to the proposed dealing with the profit and loss account, a form of proxy accompanies this report, which, in the event of your being unable to attend the meeting, it is requested may be returned to the office, duly signed, on or before the 31st instant.

The CHAIRMAN said the necessity of dealing with the profit and loss account had been discussed at the previous meeting. As far back as 1867 it had been deemed desirable, under the advice of Mr. Moore, to open a profit and loss account; from that time it had been the custom to take into account and charge against revenue whatever sums had been disbursed during the year, so that really a great portion of the sum of 10,000, standing to the debit of profit and loss was properly chargeable against capital, and should be put into capital account. Counsel's opinion, which had been taken upon the question, was substantially what had been put in the report—that the auditors should be instructed to go through the profit and loss account from its commencement, to eliminate from it the items which are properly chargeable to capital, and to transfer these items to the capital account. While there was a balance standing to the debit of profit and loss a dividend could not be paid, although for the six months ending June 30 there had been earned a profit of 6693½; that result had been obtained during the six months which embraced the dry season. By the end of the year 1875 it seemed probable they would have made a profit of at least 12,000, therefore they hoped to declare a dividend at the next meeting to be held in March. It would be a great pity to leave the accounts in their present condition, because they were advised a dividend could not be declared until the large account standing to the debit of profit and loss had been cleared away. If the auditor took every item he considered fairly chargeable to capital and brought them into the capital account, there would be left a sum sufficient to enable the directors to declare a dividend. All the shareholders were now asked to do was to sanction the principle. With regard to the mines, the shareholders had so recently met and been so fully informed by him as to their condition that he had very little further to say. He might mention, however, that during October a profit of 1200½ had been realised, and that did not include any gold from the Silencio Mine. As soon as the engine went to work at that mine the produce from it was estimated at from 40 lbs. to 60 lbs. (Spanish) of gold per month, equal from 600 to 800 ozs., while the expenses would be about 200; that would be 1200½ or 1400½ profit to add to that now being earned, increasing the profit to at least 2400½ per month. Mr. White told them they were only now at the threshold of their success, and that the mines were only now commencing to be worked profitably; so that he (the Chairman) thought the success of the company was now assured. One piece of advice he gave the shareholders was not to sell their shares, for the public would soon begin to see the value of the property the company possessed. He then moved that the report and accounts be received and adopted.

Mr. BAXTER (a director) seconded the proposition. Mr. WINGFIELD said it was clear that, whatever the condition of the capital, the several items should have been distributed to capital and not to profit and loss. The whole of the expenditure until the mine had been brought into working order

should go against capital. He suggested that the whole account should be reconstructed.

The CHAIRMAN said the auditor was the servant of the shareholders, but he (the Chairman) should not have advised his colleagues to deal with any portion of the profits actually made without first clearing that debit away in a proper and legitimate manner.

The report and accounts were received and adopted.

The CHAIRMAN then proposed that the company's accounts be revised under and subject to the approval of the auditor, and in accordance with the advice of counsel, and that those items that have been improperly carried to the debit of the profit and loss account be eliminated therefrom and charged to the capital account.

Mr. BAXTER seconded the proposition.

Mr. YOUNG said it was a matter that could be safely left in the hands of the directors.

The CHAIRMAN said the proposition had been made by the directors for the shareholders' protection.

Mr. WINGFIELD submitted an amendment, which, for want of a seconder, fell through.

Mr. YOUNG, as the largest shareholder, proposed that the sum of 1000½ be given to Mr. Thomas Eyre Foakes (the Chairman) in acknowledgment of the very valuable services he rendered the company during the past five years, such sum to be paid out of the first available profits of the company. Five years since the company was stranded, and the shareholders were indebted almost entirely to Mr. Foakes for the altered position it was now in.

Mr. PARLEY seconded the proposition.

Several shareholders supported the motion.

Mr. YOUNG, putting it to the meeting, said he felt he could hardly reply Mr. Foakes for the pains he had taken.

The proposition was carried unanimously. The CHAIRMAN said he was deeply grateful for the acknowledgment of his services. He had endeavoured to do his duty, and had tried very hard to bring the property into the state it is now in. He had spent an immense deal of time, and he hoped he should not be thought immodest if he were to say that but for his exertions, and the onerous duties he had taken upon himself, the whole of the company's capital would have been lost. Not the least part of the pleasure of it was the manner in which it had been voted. He again thanked the shareholders for the very handsome reward voted him for his labours and exertions, and hoped the next time they met one of the objects of the meeting would be the declaration of a handsome dividend. A vote of thanks to the Chairman and directors closed the proceedings.

IFTON RHYN COLLIERIES COMPANY.

A meeting of shareholders was held on Wednesday at the Cannon-street Hotel.

Mr. W. PRICE in the chair.

The notice calling the meeting was read by Mr. BREAKSPEAR, the secretary.

The CHAIRMAN said his duty to-day would be very short so far as any preliminaries were concerned, because the shareholders would not expect him to go over the whole case which had been presented to them. The directors very much regretted that the committee sought no opportunity of a conference with them as to the future government of the company, and the committee had kept themselves to themselves, and had investigated the charges, but had not sought to meet the directors in a friendly way, with the view of seeing whether they could not pull together in a way which would be likely to accomplish some good for the Ifton Rhy Collieries. The committee from the first had made serious charges against the directors, which had not the least foundation in fact. From what had taken place since, and from the remarks in the committee's reply to the directors' reply, it was evident some gentlemen on the committee intended to take further steps. The committee stated they were advised, and believed, "that the directors and syndicate were liable to the company for all the moneys taken by them under representations which could be only termed false and fraudulent." Now, that was a very serious charge, and he, on behalf of the board, entirely repudiated it. He himself had been connected with the City of London more than 45 years, and was well known to many gentlemen, and believed had obtained the respect of those who did know him, and the charge against the directors never ought to have been made unless the committee could have produced some proof. The directors had consulted several solicitors upon the matter, and one and another gave the opinion that the words complained of in the prospectus did not imply that which the committee attempted to make out that they did imply. If the committee could get a judge and jury to read that "will be effected" meant "has been effected," probably the plaintiffs might expect a verdict, otherwise the verdict would be for the defendants, and the plaintiffs would probably have to pay the costs. When Major Little was appointed on the committee he (Major Little) explained that he intended to go upon the committee with the intention of carrying on things as smoothly as possible, and that he would not interfere with the directors' appointment on the board there was no doubt that he had in his mind the intention of bringing out this charge of what he called a false and fraudulent prospectus. The committee went on to state that in the preparation of their report they were studiously careful to confine themselves to statements of facts; now he (the Chairman) had no hesitation in saying that the statements in the committee's report were in many respects the reverse of the fact, but the report simply contained facts which the directors had fully disproved one by one. He would like to know whether Major Little or Mr. Porter were prepared to make any explanation of the letter. For his own part he must say he thought it an extraordinary step for a member of the committee to talk of presenting a petition for winding up the company. He could not congratulate Mr. Porter, and believed that the petition would be dismissed, and that Mr. Porter would have to pay the costs; he could only say that the directors would oppose the petition to the utmost. Referring to the charge of having obtained a loan of 7000½ at 5 per cent. obtained at a rate not exceeding 15 per cent., he might mention for the information of the meeting that the directors had obtained a loan of 7000½ at 5 per cent. at the very last moment to save the property of the company, and three of the directors had given their personal guarantee for the return of the loan. He mentioned that the directors had received a large number of proxies, thus showing the confidence which large numbers of the shareholders still had in the board. He was pleased to say that a telegram had been received that morning from Daywell, the property adjoining the Gobowen property. On that property they had been sinking for coal, and had sunk a 13-ft. shaft to a depth of 65 yards, and they had that morning sunk upon the 9-in. seam of the Rhyon coal, which of course was a most valuable discovery for the shareholders of this company, as it proves the value of the Gobowen property.

Major LITTLE thought the Chairman had somewhat drawn upon his imagination for these facts. He went on to refer to the original prospectus, especially to a plan which was sent out with the prospectus, and said that on that plan there was apparently constructed a railway considerable length running right up to the property, and, knowing the value of having good communication with the mine, he looked upon this as a very valuable feature, and it was this as much as anything that induced him to take his shares. To his great astonishment he afterwards found that no such line of railway existed. He believed other shareholders were also induced to join the company by seeing the railway on the plan. Referring to the formation of the company, he said there was a syndicate of 25 gentlemen, who issued a prospectus and appointed five of their number as directors, and appointed Mr. Mellor as engineer, and their own auditor. He went on to state that at the first statutory meeting, and said that at that meeting the Chairman said he had no doubt that everything would turn out as held out in the prospectus, and Mr. Mellor also stated at the same time that in three months the colliery would be turning out what was promised. Well, 2½ years had elapsed, and what position were they in? None of their hopes had been realised, and heavy expenses were being incurred, whilst no income was coming in to meet it. They were told that there were splendid horses and carts on the mine, but he had since been told that these had all been sold to meet expenses. Then there was the 7000½ (No. 10.) The Ifton property was altogether mortgaged, and when the time came for the payment of the money and they could not pay it, what would be done? Why probably another syndicate would be formed, who would purchase the property.

The SOLICITOR stated that Major Little was mistaken as to the Gobowen property, a matter of fact the Gobowen property was recited in the lease deed of the Ifton property.

Major LITTLE concluded by expressing his utter want of confidence in the directors.

Mr. JONES, a member of the committee, in the course of a long speech said the committee had come to the conclusion that Mr. Mellor's judgment was not to be relied upon, and the object of the shareholders should be to obtain directors who were not the victims of delusion or illusion. He certainly thought Mr. Porter believed the company was in a better position than when they met last, because at the time of the former meeting threatening letters were coming in from the shareholders were due to the directors for having obtained such an advance, and cleared off the small debts, and left a small balance in hand. He had heard that the directors intended to obtain a liquidation through a friendly solicitor, with the view of being able to form a syndicate with the idea of purchasing the property themselves. He did not believe a word of any such statement, but no doubt Mr. Porter believed such was the intention of the directors at the time he presented his petition to wind-up the company. For his own part, he considered they were far from being in the disastrous condition which some shareholders seemed to imagine. They had 20,000½ worth of machinery on the mine; there was 5000½ worth of brickwork on the mine, and 5000½ worth of earthwork, clearing away, and so on. There were about 500,000 tons of coal which could be seen, and by the time they were got out there would be left a profit of about 4s. per ton; and then, for the 7000½ of loan, they had the assurance of the manager that the present weekly output of 165 tons could be largely increased, till they increased it to 1200 tons per week. He believed if they could raise 10,000½ they would be able to pay a small dividend. He hoped Mr. Porter would withdraw his petition for a liquidation. He moved the report of the committee be accepted.

Major LITTLE said he wished to explain that he knew nothing about the petition which was presented by Mr. Porter.

Mr. PALMER seconded the adoption of the report.

Mr. KING, in the course of a reference to the past history of the company, said that some of the directors did not pay their calls until they had sold certain shares.—The CHAIRMAN: No, no.

Mr. KING said he contended that the syndicate was responsible to the shareholders for every shilling of money which they had subscribed to the company. He said that a considerable portion of the capital was bogus capital, and had never been paid up. He urged that some energetic steps should be taken to put the company under better management.

Mr. R. S. FRANCE went into long details, and quoted from several letters, some of which were of a private character, relative to previous matters which transpired in connection with the company. He contended that the prospectus was written by Mr. Mellor's own report, whereas another report, written by Mr. Etheridge at the same time stated that the Ifton Rhy property was doubtful as regarded the value of the coal, and nothing had transpired since which showed that the property was of the value stated in the prospectus. As regarded the Gobowen property, he believed it was a valuable one.

Mr. DAVIS briefly referred to some of the points which had been raised by Mr. France, but as they were mostly explanations on personal matters it is unnecessary to give them at length.

Mr. LINDO urged the adjournment of the meeting.

Mr. PULBROOK explained that there was no truth in the insinuation which had been made that he was in collusion with Mr. Mellor to wind-up the company. He warned the shareholders that the committee's report contained charges of fraud against the directors, and, therefore, they ought to be careful how they passed such a resolution adopting the report until after the petition was heard. He thought the committee, as at present constituted, did not possess the confidence of the shareholders, and that their report should be rejected, and another committee appointed. So far from the directors trying to get the property into their hands, it seemed to him that Mr. France was the only gentleman who was trying to get it into his hands, as he was doing all he could to run it down.

The CHAIRMAN, after some further discussion, then moved, "That the report of the committee be not accepted, and that the committee be dissolved."—This was seconded by Major-General DAVISON, and carried.

Mr. P. then moved, "That the meeting having learnt that Mr. Jonathan Porter, a shareholder, had presented a petition for winding up the company, hereby expresses its disapproval of the same, and a desire that the directors will strongly oppose the same on behalf of the company."—This was seconded by Mr. JOHN JONES, and carried.

Messrs. Smith and Jones were then elected as new directors.

Considerable alterations were then made in the Articles of Association, and the meeting dissolved.

BLUE TENT CONSOLIDATED HYDRAULIC GOLD MINES OF CALIFORNIA.

The adjourned general meeting of shareholders was held at the offices, Austin-street, on Wednesday.

Mr. J. IRVING COURTNEY in the chair.

Mr. W. J. LAVINGTON (the secretary) read the notice convening the meeting.

The CHAIRMAN said: Since the meeting was adjourned a balance-sheet and report from Prof. Price, the company's general agent, on the construction of the canal and the present condition of the property, has been forwarded to each shareholder, and I now purpose to review these documents. The report deals with the difficulties and obstacles which had to be surmounted in constructing the canal, and is accompanied with a lucid statement of the cost of each section, so well drawn up that each shareholder can see for himself at a glance the cost of any particular section of the 31 miles of canal; the total of these figures is included in the balance-sheet, with the addition of the expenditure incurred before Mr. Price took charge. I do not think that all the shareholders fully realise the arduous character of the work just finished, though a careful perusal of Mr. Price's report will give an indication of its nature. What was said of the celebrated projector of the New River Company is very applicable to our recent labours, for we have been "grappling with hills, struggling with rocks, fighting with forests," and in spite of all obstacles have at length accomplished our object. We start from a point on the South Yuba river, near Emigrant Gap in the Sierra Nevada, and for the first four miles, the geological formation being solid granite, a wooden flume had to be built, the bed having to be blasted out of the rock. After this comes a long excavation, interrupted by the main tunnel, but again continued for several miles to Omega, passing through variable ground, sometimes slate and sometimes lava and gravel, and in places broken by ravines, where lofty trestlework had to be used, its size being 10 ft. wide on top, 6 ft. in bottom, and 4 ft. deep, on a grade of 9 in. to the mile. The capacity of the canal for these ten miles is 5000 miners' inches of water—in other words the flume can convey as many million gallons of water as the New River Company bring daily into London. The section from Omega to a spot known as the Junction runs through extensive beds of lava, and required extra care in its construction; the capacity of this section is 4000 miners' inches. From this point a long stretch of 11 miles over ground of a very deceptive character, having to pass through a mile of indurated lava and metamorphic slate, brings us to the Tent, thus making the total length of the watercourse nearly 31 miles. The total cost, including the amount spent while Col. Tozer was superintendent, is \$5,372, 13s. 1d., so that the aqueduct has averaged over 1000 a mile, but you will have observed that the cost of the several sections varied extremely, according to the character of the ground. I have lately had an opportunity of learning the cost of similar works elsewhere, and, taking into consideration the large capacity of our canal and the country it traverses, I think it will be found on the score of cost to compare favourably with other canals. It is true that the original estimates of all the surveyors have been exceeded, but the country in the Sierra Nevada Mountains is so uncertain, owing to the lava flow, that scarcely any close estimate for this kind of work can be framed. On its value to the company I need hardly dilate; it is evident we never shall be able to live, for we have made it to get the water necessary to develop the property. Water sells in that district for not less than 1d. per miners' inch, and is not likely ever to fall materially in price, because in future years the demand will not lessen; on the contrary, I should think it would rather increase, and that these water franchises will yearly command a higher value. When our canal is worked to its full capacity we shall have surplus water to sell, and now people know they can rely on buying water they will fit up their properties. On the 21st ult. we heard that water was flowing to the Tent, advantage having been taken of the previous heavy rains to thoroughly puddle the canal. This work occurred almost unobserved during the past year, but a good deal of work has been done on the South Yuba claim with the view of opening it up. We washed very little there last season. Mr. Price still reports it as confined and difficult to work in. He is driving cuts into the side to widen it, and give room for the water to play against the banks. The bedrock tunnel, in this claim, through which the rich gravel in the bedrock will be washed, is well advanced. I should think that by this time not more than 40 or 50 ft. remain to be driven before wash can be done through it. It is 8 ft. by 8 ft., and is on a grade of 8 in. to every 12 ft. It will permit the use of 4000 inches of water. One of the advantages of the Blue Tent property is the shortness of whatever bedrock tunnels have to be constructed. Our outlay on this kind of work has been small, especially if compared with the expenditure of our neighbour, the North Bloomfield Company, whose tunnel is 8000 ft. in length, and has cost over the amount of 100,000. In the Enterprise claim, where top gravel is being washed, large quantities of pipe-work were encountered, and the washing, owing to the short supply of water, has been irregular. Professor Price thinks that a considerable profit may be made here out of our own free water. At this I do not dissent. The Blue Tent claim, which we worked this season; it adjoins the South Yuba claim. Mr. Price has started a bold and comprehensive plan of working, which on reference to the map of the property will be readily understood. He intends to wash the banks in the South Yuba right and left until it is connected with the Blue Tent claim on the one hand and with the Johnson on the other. He will thus get a good wide cut, and be able to operate to much greater advantage. This widening out will constantly be going on, and in time very extensive banks of gravel will be exposed to the action of the water, extending from the northern end of the Geopher claim to the southern boundary of the property, giving a total length of face of 4500 ft. on the blue gravel. We began washing on the Enterprise in November, using water from the South Yuba Company, as well as some from our own short ditches. I assume we now are washing on the South Yuba claim and on the Blue Tent claim as well, the new canal having furnished us additional water on the 21st ultimo. In his report Mr. Price calls attention to the fact that we are now for the first time in a position of self-dependence, for the successful working of our property. He confirms other authorities as to the gravel being situated on the true gold belt, and of undoubted richness; and you must remember that this class of property is not like a mineral vein, liable to give out at any moment. Here you have 500 acres, by at least 400 ft. in thickness, of auriferous gravel. I trust during this season we shall remove a good quantity of the rich gravel on the bed rock, for, though we have washed out 22,000½ worth of gold, we have not been able as yet to get at this kind of gravel to any extent worth mentioning. Our heavy expenditure is at an end; we must, however, pay what we owe on account of canal cost, and I think that with this great work finished we shall issue the debentures even more quickly than we did when it was in an incomplete state, as they carry a high rate of interest, and are now so thoroughly and substantially secured. I am glad to say that since the accounts were made up an additional 2500½ of the debentures have been taken. I have been obliged to speak at some length, but will not detain you any longer. I beg to move the adoption of the balance sheet and accounts.

Mr. J. A. FOOT drew attention to several items in the balance-sheet, and to the statements made by Col. Tozer in the last annual report. It seemed that gold of the value of 22,000½ had been washed out from which a profit of only 388½ had been realised. Was that owing to the unprofitable ground washed, or were the costs larger than anticipated? He presumed the cost of the water had not been larger than the previous year.

Mr. GEORGE BATTERS asked what had been paid out of the 22,000½ for water?

The CHAIRMAN: About 9000½.

Mr. BATTERS said that 9000½ expended in using an irregular supply of purchased water had been a great loss to the company even upon working in this small way with the company's own water. He had understood the supply of water had been very inadequate.

The CHAIRMAN said they had washed very little indeed, and apologetically, yet the working during the past year had realised 12,000½, having paid nearly 4000½ for water.

Mr. BATTERS asked what quantity of water the completed canal would carry?

The CHAIRMAN: 25,000,000 gallons per day, or as much as the New River.

Mr. BATTERS thought the best thanks of the shareholders were due to the Chairman, as he had not been for his exertions in many ways the company would never have been brought into its present condition, as the most important work—the canal—would not have been completed. The CHAIRMAN, replying to shareholders, said that Colonel Tozer said last year he expected a profit from the South Yuba claim, but when he (the Chairman) was on the property, from its condition, he saw a great deal of work had to be done. The result had been that where Colonel Tozer had estimated profits he had been unable to realise them. At the Enterprise they were still washing top gravel, of which there was an immense quantity. Prof. Price says the top gravel paid for a certain price, and that a considerable profit may be got from it when worked by their own water. Prof. Price, in whose opinion he (the Chairman) had perfect confidence, estimated that the company's gravel averaged 400 ft. in thickness over the whole area of about 500 acres.

Mr. BATTERS said the cubical contents represented an amount of auriferous

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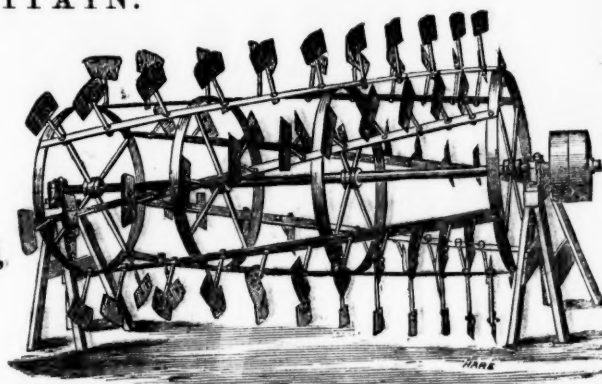
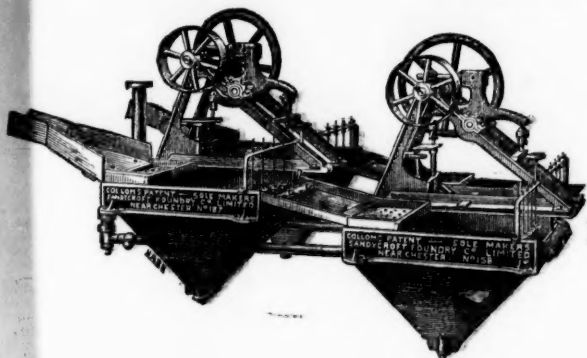
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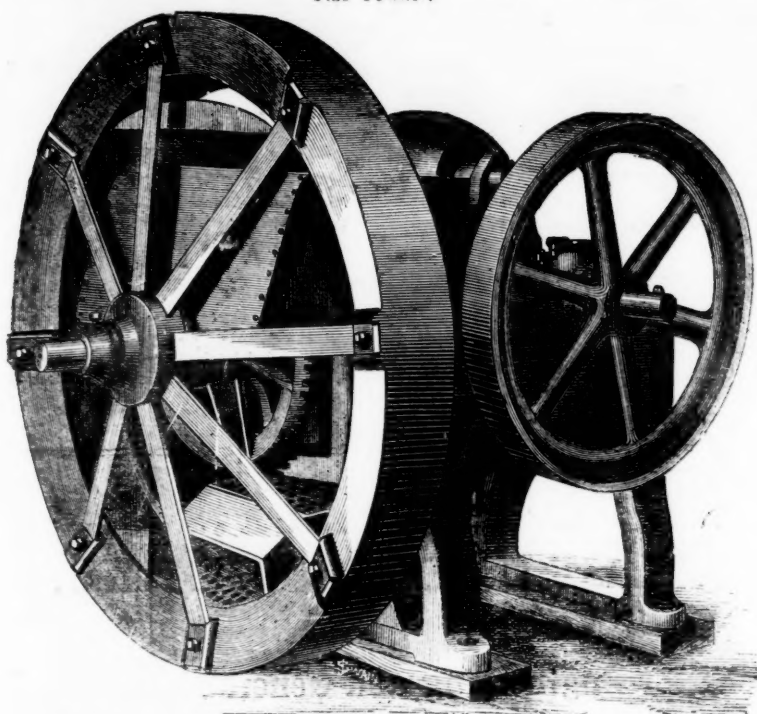
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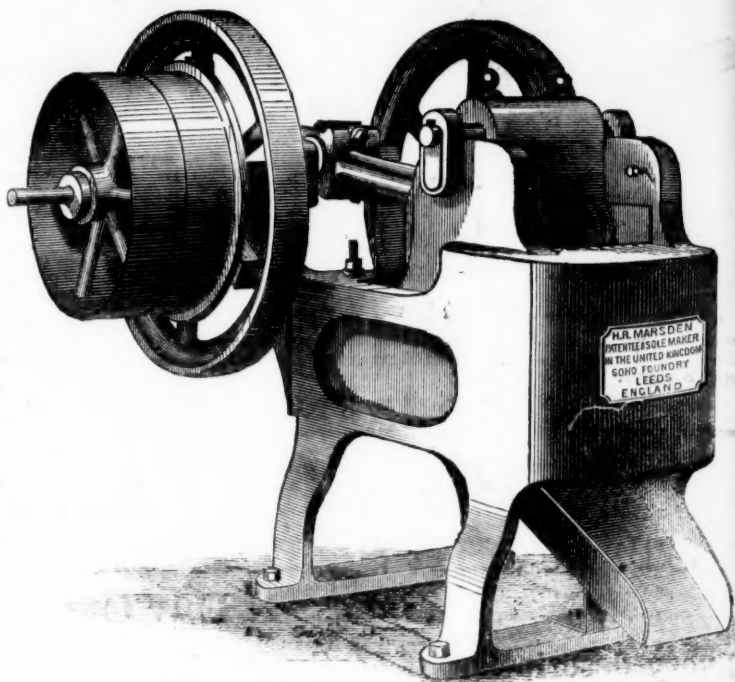


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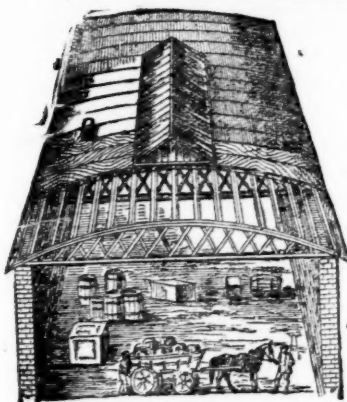
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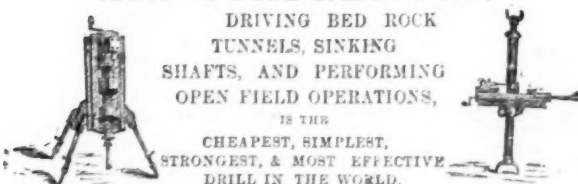
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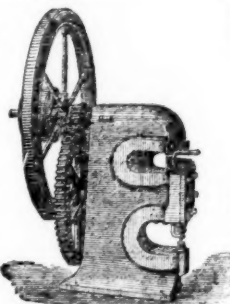
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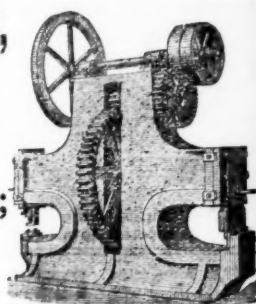
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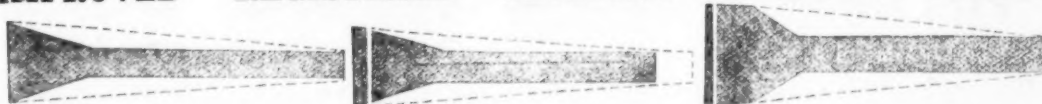
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